

**Standardized Outpatient Rehabilitation Model of Care for Patients Post-Hip Fracture  
(January 2014)**

The proposed model serves as a guideline recognizing that deviation from the model may occur for patients with complex needs or cognitive impairments.

**Length of the Program** Average 8 weeks (ranging from 6 to 12 weeks), depending on patient’s clinical needs.

**Frequency of Intervention** Average 2x/week

**Length of each session** 45 to 90 minutes/session, depending on patient’s tolerance level and the number of health professionals seen

**Structure** 1:1 session or small group, as needed and depending on the program’s patient volume

**Program Content\***

Key Components of Rehabilitation:

- Therapies to improve independence in self-care, transfers, ambulation, and ADLs (e.g., dressing, washing, toileting) to allow patients to return to their pre-fracture living environment
- Balance and gait training and assessment
- Nutritional supplementation (high energy protein, vitamins, and minerals)
- Education on safety and falls prevention for patient, family, and caregivers
- Provision of a progressive strengthening exercise program
- Environmental modification
- Osteoporosis management and education
- Medication management

The outpatient rehab program should refer patients to other community resource(s) that address(es) missing component(s) not provided by the program.

\* Health Quality Ontario; Ministry of Health and Long-Term Care. Quality-Based procedures: Clinical handbook for hip fracture. Toronto, ON: Health Quality Ontario; 2013 May. 97 p. Available from: <http://www.hqontario.ca/evidence/publications-and-ohac-recommendations/clinical-handbooks>.

**Discharge from Outpatient Rehab** Patients are discharged from an outpatient rehab program based on evidence from standardized outcome measures (i.e., Timed Up and Go, Berg Balance Scale, etc.), and the achievement of goal(s) (i.e., safe use of gait aid, safe use of stairs, improvement of or independence in functional activities of daily living, etc.), within the context of patients’ environments and support systems.

This model was based on models of care from literature and current outpatient rehab programs across the TC LHIN. It is recommended that this model be re-assessed once the Quality-Based Procedure Funding is implemented across inpatient and outpatient rehab programs for this patient group, or if significant changes in referral patterns to outpatient rehab programs occur related to patient volume and/or complexity.

## APPENDIX A: BACKGROUND

The TC LHIN MSK/Stroke Implementation Working Group has requested GTA Rehab Network to identify the optimal outpatient rehabilitation model of care for patients post-hip fracture. To address this objective, the GTA Rehab Network:

- Conducted a literature review on the benefits of outpatient rehabilitation program following a hip fracture (please refer to Appendix B).
- Interviewed 22 key informants from 6 acute care organizations and 7 outpatient rehab programs in August/September 2013, including PTs, SWs, OTs, Practice Leaders, Advanced Practice Clinicians, Clinical Resource Leaders and other individuals in administrative roles (please refer to Appendix C).

Convened a consultation group on January 16, 2014 to discuss and confirm the proposed outpatient model of care for patients post-hip fracture based on literature review findings and an analysis of current organizational practices (please refer to Appendix C).

## APPENDIX B: REFERENCES

**Auais, M., Eilayyan, O., & Mayo, N. (2012). Extended exercise rehabilitation after hip fracture improves patients' physical function: A systematic review and meta-analysis. *Physical Therapy*, 92 (11), 1437-1451.**

A systematic review and meta-analysis study that included 13 trials in the systematic review and 11 trials in the meta-analysis study comparing extended exercise programs with usual care for community-dwelling individuals after hip fracture. The study concluded that an extended exercise program for patients with hip fractures has a significant impact on various functional abilities.

**Binder, E., Brown, M., Sinacore, D., Steger-May, K., Yarasheski, K., & Schechtman, K. (2004). Effects of extended outpatient rehabilitation after hip fracture: A Randomized Controlled Trial. *JAMA*, 292 (7), 837-846.**

90 community-dwelling individuals with hip fracture participated in a randomized controlled trial comparing an intervention group attending extended outpatient rehab including progressive resistance training 3x/week for approximately 45 to 90 minutes for 6 months to a control group receiving home intervention of less intensity. The intervention group improved in physical performance, strength, balance, and reported less disability than the control group.

**Carmeli, E., Sheklow, S., & Coleman, R. (2006). A comparative study of organized class-based exercise programs versus individual home-based exercise programs for elderly patients following hip surgery. *Disability and Rehabilitation*, 28 (16), 997-1005.**

63 participants living at home following hip fracture surgery participated either in an outpatient supervised exercise program for 50 minutes/session, 3x/week for 14 weeks or in a home-based program unsupervised. The group attending outpatient program demonstrated improvements in 6 of 6 tasks in the Physical Performance Test (PFT) and some items in the SF-36 as compared to improvements in 4 of 6 tasks in PFT by the home-based group.

**Crotty, M., Unroe, K., Cameron, I., Miller, M., Ramirez, G., & Cousner, L. (2010). Rehabilitation interventions for improving physical and psychosocial functioning after hip fracture in older people. *Cochrane Database of Systematic Reviews* (1), 1-31.**

A systematic review evaluating the effects of interventions aimed at improving physical and psychosocial functioning after hip fracture included 9 heterogeneous, well conducted trials; however, concluded that there is insufficient evidence to recommend practice changes.

**Handoll, H., Sherrington, C., & Mak, J. (2011). Interventions for improving mobility after hip fracture surgery in adults (Review). *Cochrane Database of Systematic Reviews* (3), 1-195.**

A systematic review evaluating the effects of different interventions for improving mobility after hip fracture surgery in adults included 19 randomized or quasi-randomized trials, and concluded that the trials generally indicated the possibility of enhancing mobility after hip fracture; although, optimal method to achieve this remain unclear.

**Hauer, K., Specht, N., Schuler, M., Bartsch, P., & Oster, P. (2002). Intensive physical training in geriatric patients after severe falls and hip surgery. *Age and Ageing* , 31, 49-57.**

28 participants with a history of fall and hip fracture surgery participated in a prospective, randomized controlled intervention study of 12 weeks, and were assigned either to an intervention group engaged in progressive resistance and functional training 3x/week or to a control group receiving motor activities 3x/week. Fall-related emotional state, strength and functional motor performance improved in the intervention group as compared to control group.

**Jones, G., Jakobi, J., Taylor, A., Petrella, R., & Vandervoort. (2006). Community Exercise Program for older adults recovering from hip fracture: A pilot study. *Journal of aging and physical activity*, 14, 439-455.**

27 individuals post-hip fracture participated in a pilot study for 16 weeks were either assigned to an intervention group receiving strengthening exercises 2x/week for 45 minutes led by an older adult certified fitness instructor or to a control group receiving conventional home-care services. Mobility, balance and strength significantly improved in the intervention group as compared to control group.

**Singh, N., Quine, S., Clemenson, L., Williams, E., Williamson, D., Stavrinou, T., et al. (2012). Effects of high-intensity progressive resistance training and targeted multidisciplinary treatment of frailty on mortality and nursing home admissions after hip fracture: A randomized controlled trial. *Journal of the American Medical Directors Association*, 13 (1), 24-30.**

124 participants after hip fracture surgery were randomly assigned to an outpatient clinic 2x/week for 12 months engaging in high-intensity resistance training or to a control group (usual care and does not include weight-lifting exercise). Reduction of mortality, nursing home use and assistive device use over 12 months, and improvements in toileting and transferring independence were observed in the intervention group.

**Sylliaas, H., Brovold, T., Bruun Wyller, T., & Bergland, A. (2011). Progressive strength training in older patients after hip fracture: A randomised controlled trial. *Age and Ageing* , 40 (2), 221-227.**

150 home-dwelling individuals post-surgical fixation for a hip fracture participated in a randomized controlled study comparing the intervention group (outpatient clinic setting, 2x/week for 45 to 60 minutes/session for 3 months) to the control group. The intervention group demonstrated better performance in Berg Balance Score, strength, mobility and IADLs.

**Sylliaas, H., Brovold, T., Bruun Wyller, T., & Bergland, A. (2012). Prolonged strength training in older patients after hip fracture: A randomised controlled trial. *Age and Ageing*, 41 (2), 201-212.**

95 home-dwelling individuals post-surgical fixation for a hip fracture who completed a 3-month progressive strength-training program were assigned either to a randomized controlled trial in an outpatient clinic for 12 weeks, 1x/week 45 to 60 minutes/session or to a control group. The intervention group demonstrated better performance in Berg Balance Score, strength, mobility, IADLs and SF-12.

**Taylor, N., Barelli, C., & Harding, K. (2010). Community ambulation before and after hip fracture: A qualitative analysis. *Disability and Rehabilitation*, 32 (15), 1281-1290.**

A qualitative study with 24 participants post-hip fracture found that individuals living in the community engaged in either home-based or outpatient rehabilitation reported lack of confidence, fear of falling, physical factors such as pain and decreased level of mobility as compared to the optimism expressed by individuals who were still in the inpatient program.

**APPENDIX C: LIST OF PARTICIPANTS**

Name	Organization	Title	Key Informant	Consultation Meeting
Alma Badnjevic	West Park Healthcare Centre	Physiotherapist		•
Janet Body	West Park Healthcare Centre	Physiotherapy Clinical Resource Leader	•	•
William Cachia	UHN - Toronto Rehab Institute	Manager, Geriatric-Musculoskeletal Outpatient Services		•
Lisa Caldana	UHN - Toronto Rehab Institute	Service Coordinator, Outpatient Musculoskeletal Program	•	
David Clark	UHN - Toronto Rehab Institute	Occupational Therapist		•
Mary Grace Grossi	UHN - Toronto Rehab Institute	Manager, Musculoskeletal Program Services	•	•
Jane Harwood	Toronto East General Hospital	Manager, Inpatient Surgery	•	
Adrienne Hughes	UHN - Toronto Western Hospital	Social Worker, Inpatient Orthopedics Program	•	
Raymond Kao	St. Michael's Hospital	Case Manager, Inpatient Mobility	•	
Deborah Kennedy	Sunnybrook Health Sciences Centre – Holland Campus	Manager, Rehabilitation and Program Development	•	•
Dan Landry	Toronto East General Hospital	Physiotherapist, Inpatient Surgery	•	
Dao Lavery	Mount Sinai Hospital	Physiotherapist, Inpatient Orthopedics Program	•	
Sandra Lenarduzzi	St. Joseph's Health Centre	Patient Care Manager, Orthopedics and General Surgery Unit, Outpatient Rehabilitation Services, Fracture Clinic	•	•
Therese Liston	Providence Healthcare	Specialized Clinic Manager (former)	•	
Charissa Levy	GTA Rehab Network	Executive Director		•
Kimberley Meighan	Bridgepoint Active Healthcare	Case Manager, Day Treatment and Ambulatory Care	•	•
Sharon Ocampo-Chan	GTA Rehab Network	Project Coordinator/Planner		•
Kinny Quan-Velanoski	St. Joseph's Health Centre	Advanced Practice Clinician, Orthopedics, Physiotherapy	•	•
Shirley Price	West Park Healthcare Centre	Manager, Rehab Plus	•	
Cathy Pupo	Sunnybrook Health Sciences Centre – St. John's Rehab	Manager, Outpatient Services - Operation	•	•
Adam Saporta	Sunnybrook Health Sciences Centre – St. John's Rehab	Project Manager, Outpatient Services	•	•
Paula Shing	Bridgepoint Active Healthcare	Physiotherapy Clinical Practice Leader	•	•
Jennifer Spencer	Bridgepoint Active Healthcare	Clinical Manager, Central Therapy and Ambulatory Care	•	•
Agnes Silaj	UHN - Toronto Western Hospital	Clinical Resource Specialist, Physiotherapy	•	
Justin Stone	Sunnybrook Health Sciences Centre – St. John's Rehab	Patient Services Manager, Inpatient Musculoskeletal/S.T.A.R. Program	•	
Paula Szeto	UHN - Toronto Rehab Institute	Practice Leader, Occupational Therapy, Musculoskeletal Program	•	
Ellen Valleau	Sunnybrook Health Sciences Centre – Bayview Campus	Social Worker, Inpatient Orthopedic Unit	•	
Angela Wong	Mount Sinai Hospital	Occupational Therapist, Inpatient Orthopedics Program	•	